ARDAYCAAWIYE

ARDAYCAAWIYE

Total score

Name ……..

School……..

Roll No……

Republic of Somaliland

Somaliland National Examination Board

Form Four

MATHEMATICS

PAPER ONE

2020 - 2021

TIME 2 HOURS

Plus 10 Minutes for reading through paper

INSTRUCTIONS TO CANDIDATES

This paper consists of 8 printed pages.

Count them now. Inform the invigilator if there are any missing pages.

PART 1: 20 MULTIPLE CHOICE QUESTIONS	40 Marks
PART 2: 10 SRTUCTURES QUESTIONS	60 MARKS
TOTAL	**100 MARKS**

- Answer ALL questions in part 1 and 2
- Extra papers and mobile not allowed

Use this page for rough work. It will NOT be marked.

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PART ONE: multiple choice **(20x2 = 40 marks)**

Choose the correct answer **Answer ALL the questions each question carries 2 marks**

1. 2 X 90 – 10x 2 + 9 – 10 is

   A) 55 B) 35 c) 45 D) 25

2. If y – 2 x +5 = 0 the slope is

   A) 2 B) 5 C) -2 D) -5

3. Simplify $\frac{35}{240}$

   A) 3.5 B) $\frac{7}{30}$ C) 2.4 D) $\frac{5}{30}$

4. If A = $\begin{bmatrix}1 & 2\\3 & 4\end{bmatrix}$ and $\begin{bmatrix}3 & 5\\4 & 6\end{bmatrix}$ then A+B is equal to

   A) $\begin{bmatrix}2 & 7\\4 & 6\end{bmatrix}$ B) $\begin{bmatrix}7 & 2\\6 & 1\end{bmatrix}$ C) $\begin{bmatrix}7 & 4\\10 & 7\end{bmatrix}$ D) $\begin{bmatrix}4 & 7\\7 & 10\end{bmatrix}$

5. if f(x) = 2x + 1 , then f^{-1} (5) is

   A) 5 B) 3 C) 4 D) 2

6. Write 4.9816 to three decimal places

   A) 489.2 B) 4.89 C) 489 D) 4.892

7. 240^0 is equal to

   A) $\frac{3\pi}{4}$ B) 2π C) $\frac{4\pi}{3}$ D) $\frac{5\pi}{4}$

8. If $y = 2x^3 - 1$ then y (2) is

   A) 15 B) 23 C) 24 D) 20

9. if g(x) = $(x^2 + 1)^5$ then g(x) is

   A) $6(x^2+ 1)^5$ B) $12 x (2x + 1)^5$ C) $6(x + 1)^5$ D) $12 x(2x + 1)^5$

10. $\int (3x2 - 1)\, dx$

    A) $3x^2 – x + c$ B) $3x^3 – x + c$ C) $x^3 – x + c$ D) $10(5x + 2)$

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11. $\boldsymbol{i}^{2000}$ is

A) 1 B) i C) -1 D) $-i$

12. $(\boldsymbol{i}+1)(\boldsymbol{i}-2)$ is =

A) $+3-i$ B) $-3-i$ C) $3+3i$ D) $2+i$

13. $\lim_{x \to 6} \frac{x^2-36}{x^2-4x-12}$

A) $\frac{5}{2}$ B) $\frac{1}{2}$ C) $\frac{3}{2}$ D) $\frac{7}{2}$

14. If $f(x) = \tan 3x$, than $f'(x)$

A) $3\cos^2 3x$ B) $\sec^2 3x$ C) $3\sin^2 3x$ D) $3\sec^2 3x$

15. A fair die is tossed once. The probability that an event of an odd number appears is :

A) $\frac{2}{6}$ B) $\frac{3}{6}$ C) $\frac{1}{6}$ D) $\frac{4}{6}$

16. The math test scores were 40,36,50,65 and 60, the percentile rank of 20 is:

A) 40 B) 60 C) 50 D) 36

17. ${}_5\mathbf{P}_2$ is:

A) 20 B) 26 C) 24 D) 28

18. Cos 105^o is equal to:

A) $\frac{\sqrt{2}}{2}$ B) $-\frac{\sqrt{2}}{2}$ C) $+\frac{\sqrt{2}}{2}$ D) $-\frac{\sqrt{2}}{2}$

19. $\int_0^1 (x^5-1)(x^4)\,dx$ is :

A) 0 B) $-\frac{2}{5}$ C) $-\frac{2}{5}$ D) $\frac{-2}{20}$

20. If $Y = x^3 - 6x^2 - 15x$, then the maximum point is:

A) (-5, -200) B) (-1, 8) C) (5, -100) D) (1, 8)

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Part two: 10 structured questions **(60 marks)**

1. a) write 0.37 in fraction form (2 marks)

   .....

   .....

   b) Use division to convert the fraction into decimal for $\frac{3}{4}$ (2 marks)

   .....

   .....

   c) Calculate the value of 3^7

   .....

   .....

2. a) find the solution set for $x - 2 \leq 2x - 6$ (2 marks)

   .....

   .....

   b) Solve $\frac{x}{2} - 1 = 8$ (2 marks)

   .....

   .....

   c) Evaluate $4^2 + 3^3$ (2 marks)

   .....

   .....

3. the rate of sales tax onion is 75% , is 10 bags of onion costs $2000 before the Sales tax is added, calculate

   a) The selling price for 10 bags? (2 marks)

   .....

   .....

   b) The total amount of tax paid for 100 bags of onion? (2 marks)

   .....

   .....

   .....

   c) The total amount of tax paid for 1 bag of onion? (2 marks)

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   .....

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4. Evaluate the following limits
   a) Lim $_{x\rightarrow}$ $x^3 - 2x + 1$ (2 marks)

   .....
   .....

   b) Lim $_{x\rightarrow 5}$ $\frac{x3-25}{x}$ (2 marks)

   .....
   .....

   c) Lim $_{x\rightarrow 5}$

   .....
   .....

5. A box contains 4 red and 6 black balls. If one ball is drawn random, what is the Probability of getting
   a) Neither red nor black (2 marks)

   .....
   .....

   b) Red ball (2 marks)

   .....
   .....

   c) Black ball (2 marks)

   .....
   .....

6. Evaluate
   a) 6! (2 marks)

   .....
   .....

   b) $_5\mathbf{p}_3$ (2 marks)

   .....
   .....

   c) 10 c_5

   .....
   .....

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7. Simplify the following

a) $I^6 + i^2$ (2 marks)

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b) $(4 + 6\,i)(4 - 6\,i)$ (2 marks)

.....

.....

c) $(2 + 5\,i)(2 - 26\,i)$ (*2* marks)

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8. For the following functions find the derivative of

a) If $f(x) = x^3 - 2x + 1$, $f(2) = ?$ (2 marks)

.....

.....

b) If $g(x) = (x+1)(x^2 - 1)$, $g(x) = ?$ (2 marks)

.....

.....

c) If $k(x) = 5(x^3 - 1)^6$, $k(x) = ?$

.....

.....

9. Integrate the following

a) $\int (x^5 - 2x + 1)\,dx$ (2 marks)

.....

.....

b) $\int x^2(x^3 - 2)\,dx$ (2 marks)

.....

.....

c) $\int \sin 5\,dx$ (2 marks)

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10) the table below shows the mass of rice sold by 20 shopkeepers in a town

Mass in kgs	frequency
$10 < m \leq 30$	3
$30 < m \leq 50$	4
$50 < m \leq 70$	6
$70 < m \leq 90$	5
$90 < m \leq 110$	2

Calculate

a) Lower quartile of the data set (2 marks)

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b) Middle quartile of the data set (2 marks)

……

……

c) Upper quartile of the data set (2 marks)

END

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